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Information Systems and Technology Service Introduction Success Criteria

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Abstract—Good project management practice has been a major research theme over the last few decades with its practical impact on successful implementation of organisational strategy, becoming more paramount as business objectives become more closely linked to the lowering of prices and improvement in quality of service. It is expected that such strategy is delivered by information systems and technology. Unfortunately the need to develop and deliver innovative Information Systems and Technology projects is constrained by the belief that such projects are always going on for longer than expected. In addition, they fail to meet user requirements or a return on investment. Against this background, there have been repeated reports of very high failure rates of such projects, which indicate that businesses need to be concerned.

The approach taken to examine IS&T failure at this stage of the development of this theme is non empirical. It also avoids the traditional approach of examining the entire project lifecycle. Instead, it concentrates on examining success criteria of the project from the service introduction stage.

I. INTRODUCTION

In recent decades, there has been an increasing recognition of the significance of information systems and technology (IS&T) implementation and its effects on organisations. However, it is generally accepted [1], that the significance of information systems and technology implementations is still a grey area as relates to strategic emphasis and implementation methods.

There is no doubt that IS&T pervades all activities associated with competing organisations. However such projects are of *no* value if there is no associated fundamental restructuring of the nature of work or the behaviour of people in the organisation is achieved by the introduction of new IS&T into operational space. A clear demonstration of the importance of IS&T to organisations is that major business issues with a systems and technology component have now become major business issues in their own right. Unfortunately, the development of systems and technology for creative business processes means that IS&T introduction is more difficult and expensive to manage.

II. WHY SUCCESSFUL IS&T IMPLEMENTATION AND INTRODUCTION MATTERS

The traditional view of business organisation with clear boundaries, limited relationships and a focus on internal efficiency and effectiveness is no longer adequate in today's business world. Today's organisational boundaries are blurring and partnerships with clients and competitors are

commonplace. All these are being made possible through systems and technology that cross organisational boundaries.

IS&T provides increased competitiveness and flexibility to organisations, while at the same time, it has a fundamental impact on business relationships among co-operating and competing entities in any market. When properly implemented, IS&T enables business process redesign, supports an organisation to offer novel products, incentives and services. It also enables organisations to participate in new marketing programmes and introduce operational efficiencies [2] [3]. It is however necessary to point out that although IS&T initiatives offer an opportunity for competitive advantage, they can also increase strategic vulnerability [4]. Primarily, this has been because although as earlier pointed out there has been an increasing recognition of the significance of IS&T in the organisation, there is still a lack of fundamental frameworks within which to understand the full extent of the commercial potential of its application.

IS&T remains vitally important to organisational success because of its ability to increase competitiveness and flexibility to organisations. In addition to being an enabler of transformation and a valued competency that enables business to succeed, IS&T is also a resource for companies to use when striving for organisational excellence. IS&T also helps organisations implement re-engineering programmes, support new business strategies and deliver new products and services. As IS&T provides a strategic value to all parts of the business, any inability to achieve its strategic business objectives which is linked to poor introduction can be catastrophic. In extreme cases, collapse and economic ruin could be contemplated, such as the case of FoxMeyer Drug Corporation.

The evidence of IS&T implementation and introduction failure has been overwhelming. For example, investigations by Gladden [5] suggest that up to 75% of all IS&T development undertaken is either never completed or is not used if completed.

In terms of actual failure rates, Crescenzi [6] suggest that 83% of IS&T projects fail of which 31% are cancelled. Keil et al [7], puts forward figures closer to at least one in four projects that end in failure.

Crucial data provided by KPMG [8] based on a review of project failure rates in 134 listed global companies, indicates that approximately 56% of firms have had to write off at least one information systems and technology project between 2002 and 2003 as a failure.

What the above statistics does present is that whatever the agreed rate of failure of IS&T projects (which varies

significantly); the figures remain unacceptably high for an industry which drives business transformation. Perhaps the most worrying thing is not really that there is a very high rate of project failure for IS&T projects, but that generally, many organisations are still continuing to neglect the impact of poor systems and technology implementations on their business strategy [9].

To be able to support its strategic role, especially as relates to the support of transformational business processes, IS&T expenditure has progressively increased over the last few decades. It has now become more crucial for senior management to target funds to projects that will achieve the most benefits for the organisation. To achieve this, in the first place requires proper requirements capture and project management to remain in the forefront of any organisations IS&T policy and strategy. This approach ensures that rapid and continuous change brought about as a result of continuous improvement and the increase in complex technology is properly managed and exploited. Secondly, it is essential to ensure that the use of IS&T should also be an element in the strategic planning process because of the potential effects on the achievement of the business objective [10]. This can be achieved by integrating IS&T into the normal business as a standard (*BAU-Business As Usual*) planning processes. Its integration means that IS&T and business unit staff are encouraged to work together in developing systems and technology plans based on value that becomes part of the business unit plan. Such an approach can be developed through a traditional cost/benefit methodology that is customised to address the issues unique to information technology decisions.

It is also important to highlight the impact of the parochial management of IS&T, especially as it can become a serious liability and limiting factor for any organisation wishing to gain strategic advantage through its exploitation. Examples of this occur where the IS&T introduction process is not aligned with business strategy objectives at the initial stage at which basic strategic commitments are defined.

III. IS&T IMPLEMENTATION

IS&T implementation management remains a topic of increasing interest to organisations as they face unparalleled environmental uncertainty and turbulence. Such environmental conditions has raised the need for careful and proper dynamic planning within IS&T. This is especially relevant to organisations competing in the increasingly volatile markets where traditional strategies and resultant products based on already tried and tested competencies may not be able to drive organisational growth in the future. The reason is that what in effect is today's core strategy and competency has become tomorrow's reason for a rigid organisational strategy.

Information Systems and Technology implementation is a specialized form of project management which involves the

actual physical mobilisation of all forms of systems and technology resources (both human and material) towards accomplishing a series of business goals, strategies, and tasks within a well-defined schedule and budget. The process encompasses all stages involved in getting new software or hardware operating properly in its operational environment. It will also include post-development activities such as configuration, release management, implementation, testing, installation, updating, adapting and the actual introduction of the system. It can also involve deployment of changes in a planned and systematic fashion after a product has been designed and developed and introduced into an operational environment.

IS&T implementation is however not simply a matter of deploying system and technology that works. Its definition is wide and varying, to an extent encompassing varying and sometimes conflicting concepts. For example, Keil [11], sees IS&T implementation as a process of organisational changes. Srinivasan and Davis [12] add to this definition by characterising implementation as encompassing the vision of creating an environment in which a diverse array of users have convenient access to the necessary, training and support needed as development tools to carry out implementation task either on their own or through intermediaries. On the other hand, McGolpin [13] defines the implementation phase as the tools, techniques, methods and processes employed by the organisation to deliver strategic information systems.

Due to the very conceptual nature of IS&T implementation, it is necessary to ensure that business benefits are clearly articulated, and also that implementation is managed as a distinct organisational project. To ensure the effective management of this process, some form of project management is required and used [14][15], leading to the popularity and perceived advantages of this approach which has meant that project management has become a standard part of most organizational planning processes [16].

The new realities of the business environment also means that it is important that organisations are encouraged to take a long term view of their IS&T portfolio. Such long-term views, unlike an otherwise traditional tactical view of IS&T as a frustrating, if not unavoidable, drain on resources, means that Chief Information Officers (CIO's) charged with implementing company IS&T strategy should be encouraged to view the time and money needed to implement IS&T projects as a worthwhile investment. As a result, the CIO is expected to encourage innovation in implementation wherever possible [17]. Organisations are also expected to appreciate the strategic potential for considerable economic and ongoing efficiency gains arising from such dynamic approaches to IS&T implementation, especially as any well deployed IS&T products are expected to deliver regular, effective, efficient and viable interaction and communication between product vendors and customers.

Successful implementation may also depend on an understanding by key decision makers within the

organisation of the need to proactively deploy products that are flexible. It is expected that such products can be more easily aligned to identify strategy objectives of the organisation by having an understanding of the objectives of the design.

IV. THE NEED TO EXAMINE THE INTRODUCTION STAGE OF IS&T PROJECTS

The unique nature of IS&T projects such as its vulnerability to group dynamics, impracticability of commercial scale user acceptance testing (UAT), requirement for intense collaboration between stakeholders, its conceptual and high capital intensive nature, makes it susceptible a high probability of failure. In order to *manage this exposure, two key issues need to be considered*.

- The first involves a need to have in place a method of IS&T project success measurement based on approaches that separates performance and progress measurement criteria [18]. This approach is important although it is noted that traditionally, IS&T projects have had their criteria for success very narrowly defined in order to meet specific strategy requirements that ensures the organisation in question successfully positions itself competitively.
- The second relates to a key point highlighted by Atkinson et al [19], who building on earlier work by Chapman and Ward [20] on project life cycle uncertainty management, suggest that common perceptions of project management practice do not encompass all the stages of the project life cycle, leading to the majority of project professional guidelines failing to distinguish between strategic and lower level operational procedures. Our view at this stage is that this is a key area that is usually missed is the introduction stage of projects.

The need to narrow the actual entity measured from the overall implementation process to the introduction stage of the process is driven by a perception that in practice, strategy does not fail when it is being analysed or when its objectives are being set. On the other hand it fails due to poor management at implementation [21]. IS&T implementation is usually chaotic, unstable and fluid, meaning that project managers will usually be involved in managing changing priorities, requirement and discontinuous activities with the objective to physically execute and implement the project goals which are then expected to contribute to an organizations ability to delivery a desired strategy. In such a situation, it is safe to argue that the actual criteria of what constitute a failure or success is difficult to establish. This is because the various stages that constitute the implementation stage create difficulty in generating a universal checklist of success criteria suitable for all stages of a project. In effect, success (or failure) criteria end up differing from stage to

stage depending on a number of factors including requirements and the perceptions of the stakeholders.

IS&T introduction is not only about ensuring that new and changed systems are successfully integrated and incorporated into an existing technical space or environment. It also incorporates the need to operate new systems and services consistently and cost effectively in order to ensure high quality services. IS&T introduction is different from implementation in that its primary concern is about ensuring that changed, improved, amended and new systems and technology are successfully incorporated into an existing live technical space or operational environment with minimal disruption to the service being provided to the customer. On the other hand, implementation is more concerned with providing the practical means of physically installing or executing a plan.

By its nature, because of the complexity of interactions of both existing systems and those being introduced, IS&T introduction techniques and processes will usually depend on various factors which includes organisational culture, end user participation and expectation, political prioritisation, and the state of advancement of the technology being employed. In effect factors similar to implementation. However IS&T introduction cannot be seen to be simply a matter of using technology that works, instead it should be regarded as a process that covers a whole host of activities from the point that the service introduction model is defined to the point when it is phased out and discontinued.

V. THE INTRODUCTION PROCESS

In order to address the poor management of the introduction processes, it is usually recommended [22], that an organisation establishes formal procedures, methodologies and processes that will guide the introduction of new technologies into operational space. Such an approach, although requiring an element of flexibility in application, brings about a sense of control and discipline in the complex process, clarity in terms of expectations for both the service introduction managers, the stakeholder community, users of the systems and also the customers in terms of their experience using the system. To support the approach, it is also necessary that the introduction process is incremental and taken at manageable stages as part of a phased delivery. The benefits of an incremental approach according to Lacity et al [23], includes verifying user requirements and system design, and gaining user acceptance of the system.

Ideally, any methodology used for introducing IS&T in organisations should be flexible and agile enough to adapt to environmental changes. In addition, introduction should be as much as possible not be based on a Cut- Over approach, but on approaches involving some form of parallel or modular implementation which are less associable to risk. It is however important to point out that the use of these methodologies for IS&T introduction will not on its own

guarantee success primarily because the introduction stage is dependent on numerous other factors which includes organisational culture and the organisation's approach to risk, timescales and funding, end user participation and expectation, political prioritisation, design and the technology being employed and systems and technology compatibility.

VI. CONCLUSIONS

We are currently developing for future research a basic research theme which focuses on the service introduction stage of Information Systems and Technology projects. Hence, *the next development on this theme is to use empirical data from IS&T projects to verify why the rate of failure for such projects is still unacceptably high*. This verification will involve exploring new approaches which included the interaction of the introduction stage of IS&T projects and success criteria. This is especially true as we generally share the view that limitations in the current scope of conventional project management exist. In effect, our decision to recommend a need to examine the introduction stage of IS&T projects is based on the realisation that so far, traditional approaches to examine project failures have although produced large quantities of literature, have arguably failed to actually reduced the number of IS&T projects which are failing.

In conclusion, research on project success indicates that good project management practice especially as relates to successful IS&T introduction is a desire of the organisation. However, as it is impossible to generate a universal checklist of project success criteria suitable for all stages of a project, and with the knowledge that success (or failure) criteria will differ from stage to stage, what we see emerging is a need to consciously avoid the traditional approach of examining the entire "project" lifecycle, but to concentrate on examining success criteria of the project from the service introduction stage of IS&T projects.

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